

What is claimed is:

1. A programmable device, comprising:

5 a substrate (10);

an insulator (13) on said substrate;

an elongated semiconductor material (12) on said insulator, said elongated
10 semiconductor material having first and second ends, and an upper surface S,

said first end (12a) being substantially wider than said second end (12b) and
comprising a plurality of integral triangular-shaped portions, and

15 a metallic material on said upper surface, said metallic material being physically
migratable along said upper surface responsive to an electrical current I flowable through said
semiconductor material and through said metallic material.

20 2. The programmable device as claimed in claim 1,

further comprising an energy source connected to said elongated semiconductor
material, for causing an electrical current to flow through said elongated semiconductor
material and through said metallic material, and for causing said metallic material to migrate
25 along said upper surface.

3. The programmable device as claimed in claim 1, wherein said elongated
semiconductor material comprises a doped polysilicon.

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4. The programmable device as claimed in claim 1, wherein said metallic material
comprises a metallic silicide.

5. The programmable device as claimed in claim 1, wherein said metallic material is a metallic silicide selected from the group consisting of WSi_2 , NiSi_2 and CoSi_2 .

5 6. The programmable device as claimed in claim 1, wherein said first end comprises a plurality of integral triangular-shaped portions.

7. The programmable device as claimed in claim 1, wherein said second end comprises an oblong-shaped portion.
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8. The programmable device as claimed in claim 1, wherein said metallic material is disposed on the entire upper surface of said elongated semiconductor material.
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9. The programmable device as claimed in claim 1, wherein said metallic material is a semiconductor alloy.
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10. The programmable device as claimed in claim 1, wherein said elongated semiconductor material is N^+ polysilicon and said metallic material is WSi_2 .

11. The programmable device as claimed in claim 1, wherein said elongated semiconductor material includes a central portion connecting said first end to said second end.
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12. The device as claimed in claim 11, wherein said central portion has a maximum substantially uniform width of less than approximately one micron.
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13. The device as claimed in claim 11, wherein said central portion has a length of less

than approximately two microns.

14. The device as claimed in claim 11, wherein said central portion and said second end
5 form a T-shaped member.

15. A method of programming a device, comprising:

10 flowing an electrical current at a voltage through a device having a semiconductor alloy
disposed on a doped semiconductor line, for a time period such that a portion of the
semiconductor alloy irreversibly migrates from a first end of the device to a location proximate
to a second end of the device.

15 16. The method as claimed in claim 15, wherein said step of flowing causes heating of the
semiconductor alloy.

20 17. The method as claimed in claim 15, wherein said step of flowing further comprises
migrating an amount of the semiconductor alloy to the location sufficient to melt the doped
semiconductor line and to cause an open circuit.

25 18. The method as claimed in claim 15, wherein the time period is a time period within a
range of approximately 150 μ S to approximately 350 μ S, and the electrical current is
approximately five mA.

30 19. The method as claimed in claim 16, wherein said step of flowing causes heating of the
semiconductor alloy to a temperature of approximately 2160°C.

20. The method as claimed in claim 15, wherein said voltage is 4.7 volts, said current is

5mA, and said time period is 250μS.

21. A method of fabricating a programmed semiconductor device, includes:

providing a semiconductor substrate (10) having a thermal insulator (13);

disposing an elongated semiconductor material (12) on the insulator, the semiconductor material having an upper surface S, a first resistivity, and two ends;

disposing a metallic material (40) on the upper surface; the metallic material having a second resistivity much less than the first resistivity of the semiconductor material;

flowing an electrical current **I** through the semiconductor material (12) and the metallic material (40) for a time period such that a portion of the metallic material migrates from one end (12a) of the semiconductor material to the other end (12b) and melts the semiconductor material to form an open circuit (90).

22. The method as claimed in claim 21, wherein the first resistivity is approximately equal to 10 times the second resistivity.

23. The method as claimed in claim 21, wherein the first resistivity is a substantially uniform resistivity in a range of approximately 100 ohms per square to approximately 200 ohms per square, and wherein the second resistivity is a substantially uniform resistivity in a range of approximately 15 ohms per square to approximately 30 ohms per square.

24. The method as claimed in claim 21, wherein a combined resistivity of the elongated semiconductor material and the metallic material is a substantially uniform resistivity in a range of approximately 17 ohms per square to approximately 20 ohms per square.